2

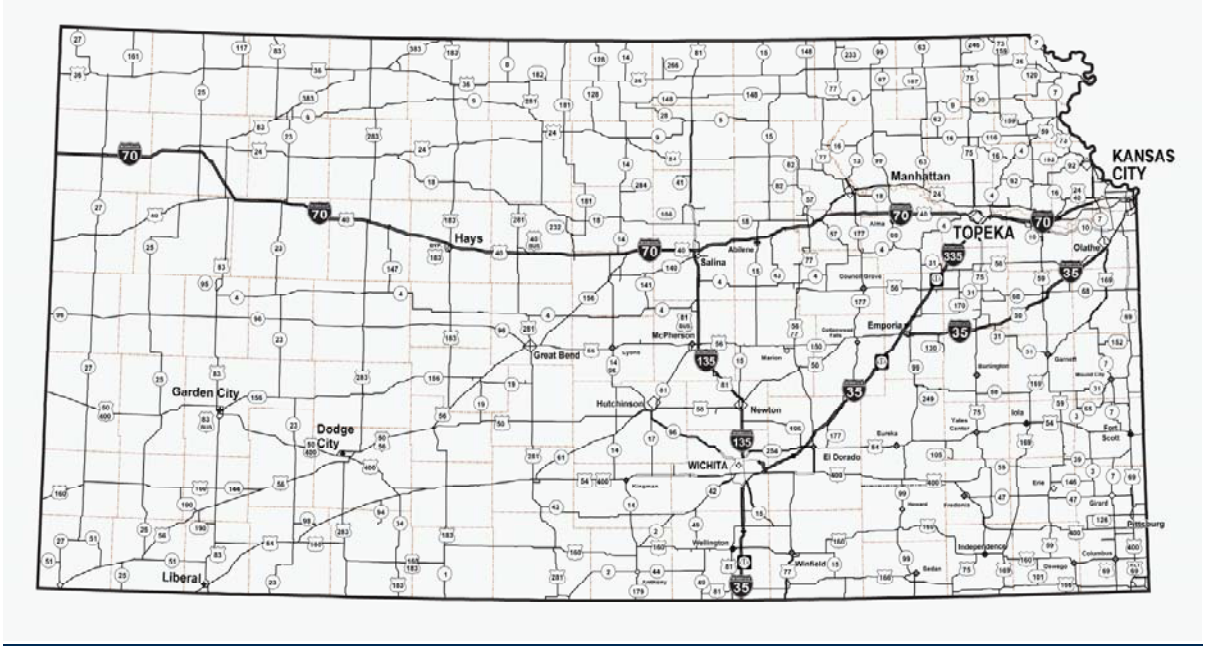
The State Highway System

2.1 Overview

The collective length of all Kansas roads is more than 140,000 miles. Highways under KDOT jurisdiction, pictured in Figure 2.1, make up less than eight percent of that total, but their impact is far greater than that percentage might suggest. They are the backbone of the road system. In 2006, they carried 56 percent of the state's total daily traffic – nearly 47 million vehicle miles in all. That same year, 35 percent of the 65,460 accidents in Kansas happened on those highways, as did 53 percent of the 427 fatal accidents. Table 2.1 provides these and other basic facts about Kansas roadways.

Typically state highways are defined as those routes under the state's jurisdiction. They are routes with an "I", "US" or "K" prefix, and most are outside of city boundaries. Highway sections that fall within city limits are designated as City

Figure 2.1 - The Kansas Highway System
- State, U.S. and Interstate Routes -



Connecting Links, or CCLs. Because these function as both city streets and state highways, they are a shared responsibility of both KDOT and the appropriate city. For the purposes of this chapter, the City Connecting Links have been included and treated as part of the state highway system.

The Kansas Turnpike is another component of the state highway system. Opened in 1956, the 238-mile tolled facility connects the four largest cities of the state and is operated and maintained by the Kansas Turnpike Authority (KTA). Because of the turnpike's many connections with other state routes, coordination and planning between KDOT and the KTA is common. Kansas Turnpike information is included as part of the state highway system statistics included in Tables 2.1 and 2.2.

Table 2.1 - Kansas Roadway Statistics and Projections

	State Highways (includes CCL's and the KTA)	County and Township Roads	City Streets	TOTALS
Miles	10,606 (7.6%)	114,106 (81.3%)	15,666 (11.1%)	**140,378**
Bridges	5,329 (20.6%)	19,449 (75.2%)	1,085 (4.2%)	**25,863**
Daily Vehicle Miles of Travel - all vehicles - 2006	46.7 million (56.2%)	13.6 million (16.4%)	22.8 million (27.4%)	**83.1 million**
Projected Daily Vehicle Miles of Travel - all vehicles - 2030	71 million (59.2%)	16 million (13.3%)	33 million (27.5%)	**120 million**
Daily Truck Miles of Travel - 2006	7.8 million (84.8%)	600,000 (6.5%)	800,000 (8.7%)	**9.2 million**
Projected Daily Truck Miles of Travel - 2030	15.7 million (87.2%)	900,000 (5.0%)	1.4 million (7.8%)	**18 million**
Accidents - 2006	23,094 (35.3%)	9,755 (14.9%)	32,611 (49.8%)	**65,460**
Fatal Accidents - 2006	228 (53.4%)	117 (27.4%)	82 (19.2%)	**427**

Highlighted cells represent the portion of the roadway system with the highest totals in that category.

KDOT ROUTE CLASSIFICATION SYSTEM

The routes within the state highway system serve different purposes. Interstates, for example, are designed to carry more long-distance truck travel than routes built for local and regional use. To identify the needs and improvements on high-priority corridors, KDOT uses a route classification system that designates roads as being in one of five classes:

- **Class A** routes are interstates. They're fully access-controlled routes that permit high-speed travel. They are important arteries with high truck volumes. Examples include I-70 and I-35; statewide, they average 21,700 vehicles per day. They make up just 8 percent of the highway system, but carry more than 40 percent of the daily travel.
- **Class B** routes are non-interstate routes with limited access, high-speed travel, long-distance truck traffic and statewide significance. Examples include US-50, US-36 and US-400; they average 5,100 vehicles per day.
- **Class C** routes are for regional travel and connect to higher-speed, limited-access roads. US-77 and K-10 are examples. The average number of vehicles per day on these routes is 3,800.
- **Class D** routes provide inter-county transport and connect to higher-speed roadways. They may have speed restrictions because of the number of local road intersections. Examples are US-50B (business route), K-16 and K-25. On average, these are traveled by 1,800 vehicles per day.
- **Class E** routes are for short trips. They typically connect small towns to nearby higher-speed routes. They carry low traffic volumes and few trucks, with K-76 and K-245 being examples. The average number of vehicles per day on these routes statewide is 800.

This classification system, established in 1988, lets the state focus attention – and limited resources – on the most traveled roads. Table 2.2 includes traffic and truck statistics by route class.

These roadways, US-81 near mile marker 220 and K-99 near Alma are examples of B and D route classifications, respectively.

Table 2.2 - Highway Statistics by KDOT Route Classification

	KDOT Route Classification					
	A	B	C	D	E	Totals
Centerline Miles	874 (8.2%)	2,186 (20.6%)	2,452 (23.1%)	3,272 (30.8%)	1,822 (17.2%)	**10,607**
Daily Vehicle Miles of Travel - all vehicles - 2006	18.9 million (40.6%)	11.0 million (23.7%)	9.3 million (20.0%)	5.9 million (12.5%)	1.5 million (3.2%)	**46.7 million**
Projected Daily Vehicle Miles of Travel - all vehicles - 2030	31.0 million (43.7%)	16.5 million (23.2%)	13.5 million (19%)	8.0 million (11.3%)	2.0 million (2.8%)	**71 million**
Daily Truck Miles of Travel - 2006	3.4 million (43.4%)	2.1 million (27.3%)	1.3 million (16.6%)	800,155 (10.3%)	187,929 (2.4%)	**7.8 million**
Projected Daily Truck Miles of Travel - 2030	7.9 million (50%)	4.0 million (26%)	2.2 million (14%)	1.3 million (8.2%)	282,600 (1.8%)	**15.7 million**

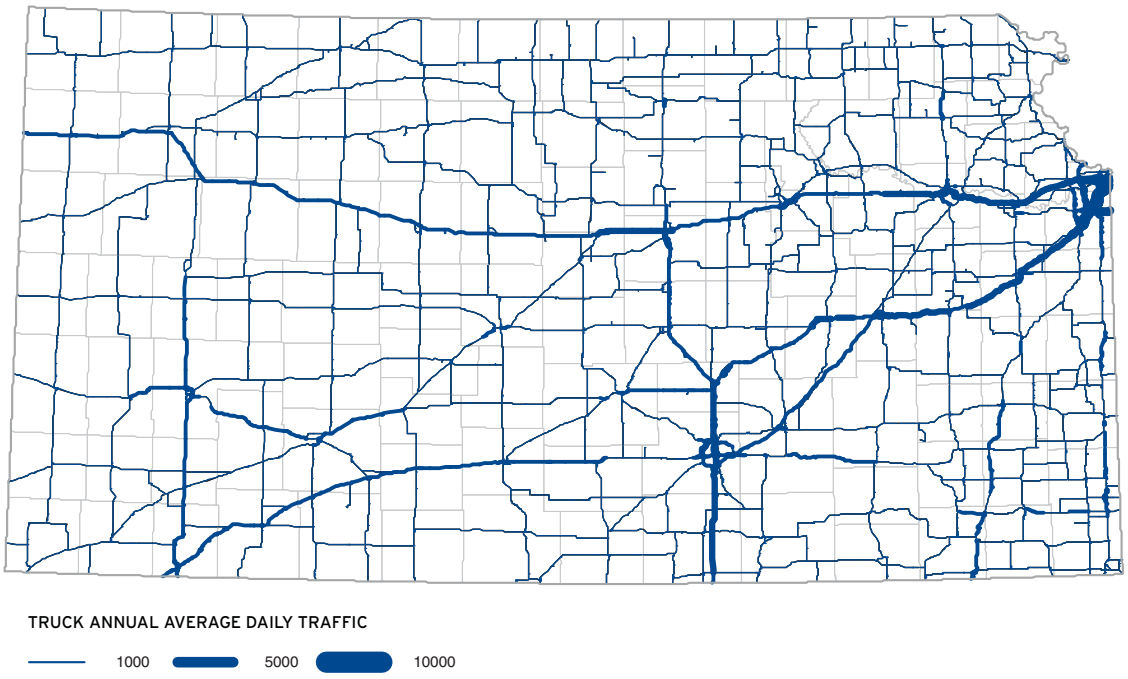
Highlighted cells represent the portion of the roadway system with the highest totals in that category.

TRAFFIC GROWTH

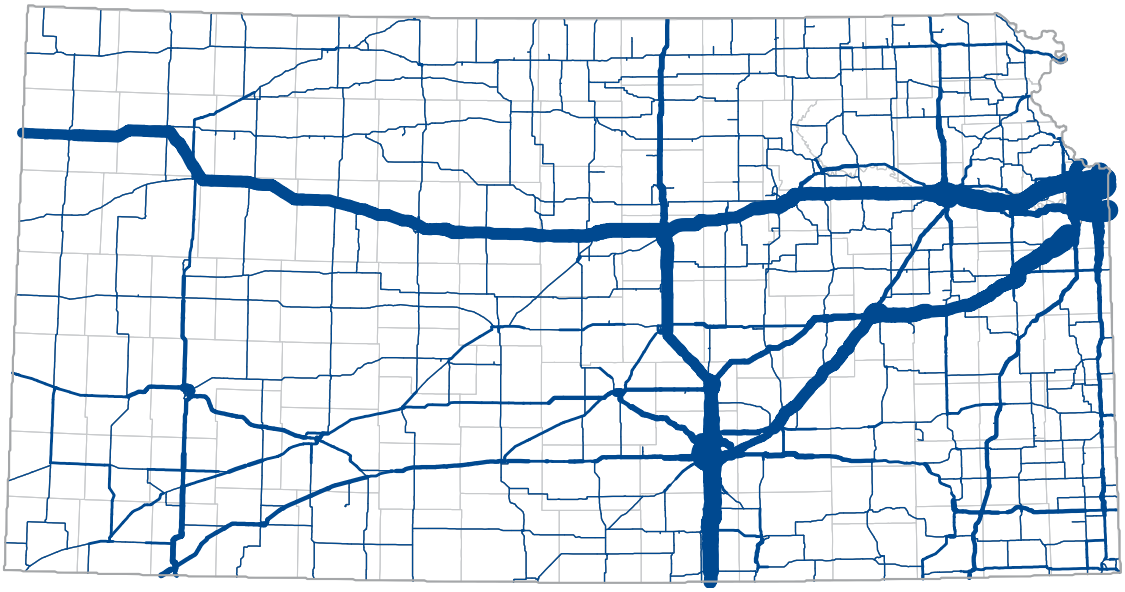
Traffic on the state's highways is expected to continue to rise, with projected growth of 102 percent in commercial truck traffic, and 52 percent in general vehicle traffic (including everything from the smallest vehicles, like motorcycles, up to the biggest trucks) over the next 20 years. This growth in traffic volume, especially the growth in truck traffic (as shown in Figure 2.2), will affect how KDOT approaches three primary infrastructure needs: preservation (maintenance and upkeep of existing infrastructure), modernization (improvement of existing roadways and bridges) and capacity (system expansion through the construction of new routes or the addition of lanes, passing lanes or interchanges to existing routes). Now we turn to a more detailed discussion and assessment of costs related to each need.

Figure 2.2 - Kansas Truck Flows – 2006 and 2030

2006 Truck Flow



Projected 2030 Truck Flow



Understanding The Needs Bar

The needs bar (pictured on the opposite page) appears throughout the LRTP. It depicts the projected annual cost of various elements of the Kansas transportation system. The highlighted component of the needs bar within any given section refers to the elements discussed in the accompanying text. A callout box defines each need and estimates its cost.

Needs estimates were developed for all transportation elements, not just those elements overseen by KDOT. The average annual investment figure reflects the revenue requirement should all future needs be addressed. The average investment figure was calculated by summing the estimated improvements required in the next 20 years and then dividing by 20. Because the LRTP spans 20 years, all expenditure and revenue estimates are expressed in inflation-adjusted 2006 dollars for comparison purposes.

It can be difficult to distinguish between "needs" and "wants." The needs estimates are based on both technical analysis and stakeholder discussions – discussions that frequently centered on whether improvements were, in fact, needs or wants. Needs estimates were adjusted throughout the LRTP process in an effort to be as responsive and realistic as possible.

The purpose of the LRTP is to identify needs without reference to the funding availability. The need estimates exceed the amount of funding that is available today or may be in the future. This list of needs, therefore, is a starting point for a discussion of transportation investment priorities. A comparison of overall transportation needs with projected revenues can be found in chapter 5. A similar discussion pertaining specifically to state highways can be found later in this chapter.

The details of how each need estimate was calculated are in Appendix B. So as not to imply a level of accuracy that is not achievable, and for ease of discussion, the needs estimates in the appendix have been rounded for the purposes of this LRTP document.

Fixed Costs and Operations Needs

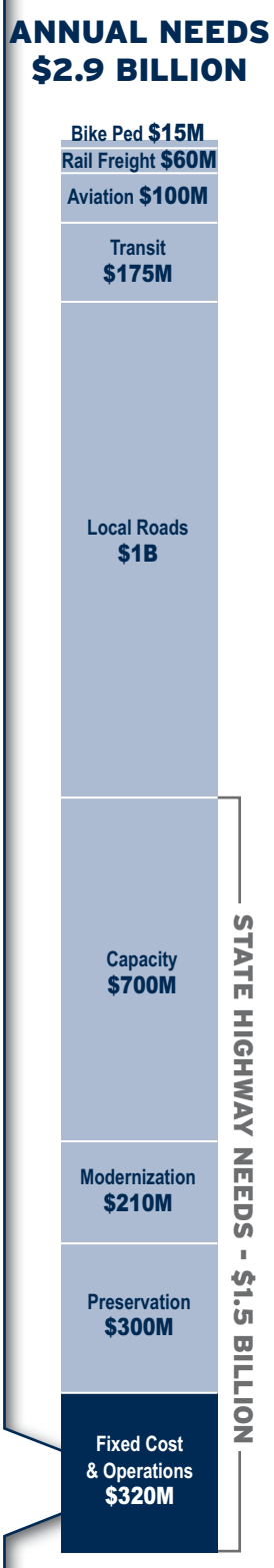
This category covers the expense of KDOT's daily operations and fixed costs, such as debt service and transfers to other agencies. A list by category of projected annual expenditures between 2010 and 2030 includes:

Routine Maintenance: $117 million – Expenditure on equipment, road crew salaries and materials used in snow/ice removal and minor roadway repair. These types of activities are typically done entirely by KDOT forces. This is the only place in the LRTP where "maintenance" is used in reference to these routine actions. Everywhere else in this document, "maintenance" refers to heavier construction-type activities and should be considered a part of preservation activities. Routine Maintenance policies are revised and updated to maximize efficiencies. For example, mowing policies are specific to different corridors, and are reviewed often to address safety, wildlife, scenic and landowner concerns. Improvements in equipment and advances in technology are also helping KDOT be more efficient in its routine maintenance activities. For example, before a winter storm hits, road crews pre-treat the pavement so that snow and ice can be removed quickly and more efficiently. The use of "winged tip" snow plows have also improved and sped up the process of clearing snow. These practices not only save time and money, but also make the highways safer to travel.

Administrative Operations: $67 million – Salaries for the agency's administrative and support personnel and daily operating costs of the agency (such as phone bills and building rent).

Debt Retirement: $78 million – Expenses related to the repayment of highway bonds. The projected cost is an average; the actual annual cost of debt service will vary widely. For the next few years, annual debt service will climb to $155 million (in 2006 dollars), then gradually decline. By 2025, all projects will be paid off. Since 1999, annual debt service has required about 14 percent of net revenues available to KDOT for operations and construction. This is well within the industry standard range of 10 to 20 percent.

Transfers: $56 million – Certain transportation-related functions performed by other state agencies financed by the State Highway Fund. KDOT transfers funds to the agencies to finance the salary and operating costs of these functions. The Department of Revenue, for example, receives state highway funds for activities related to the collection and enforcement of vehicle registrations, titles, driver licensing and motor fuel tax and the Kansas Highway Patrol receives funds for motor carrier inspection and enforcement.



2.2 Highway Preservation

Well-maintained roadways and bridges promote safety, mobility and user satisfaction. Over the last 20 years, Kansas has made significant investments in its roads and bridges.

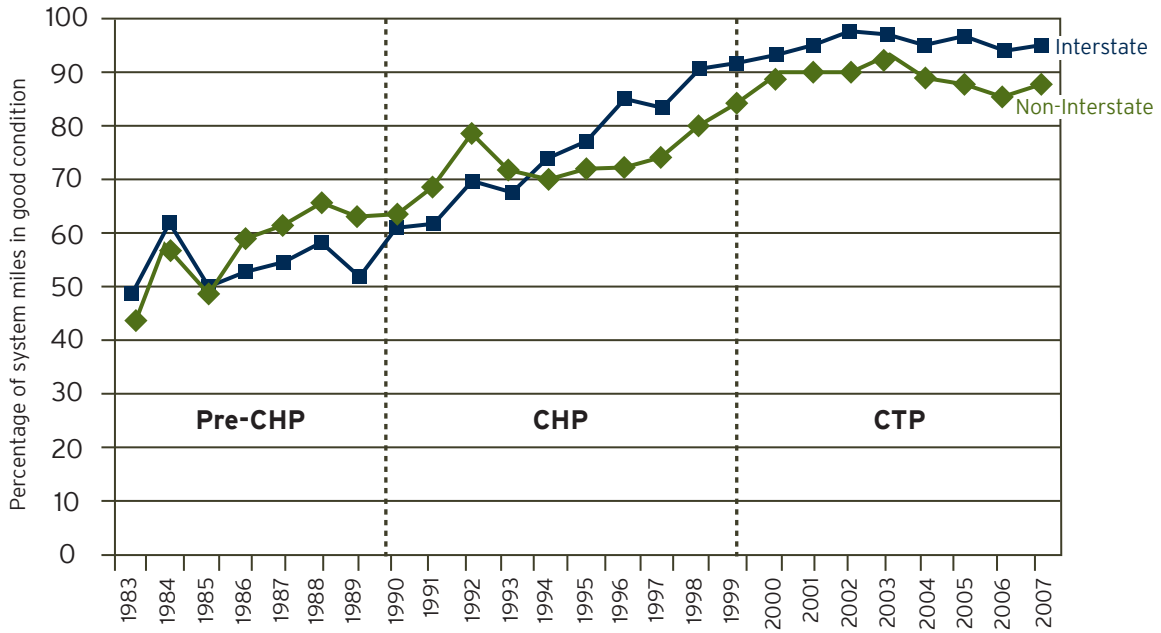
PAVEMENT

As a result of past investments, 94 percent of Kansas interstates and 86 percent of non-interstates are currently graded in good condition in terms of pavement smoothness, meeting KDOT targets (see Figure 2.3). Projections indicate that an annual investment of $200 million (in constant 2006 dollars) would be required to maintain these levels.

Figure 2.3 also raises two related economic questions that Kansans must address as they face the increasing costs of preserving and maintaining the highway system over the next 20 years.

- Kansas highways are in excellent condition, and stakeholders have stressed that keeping them that way is important. But, given the expense and trade-offs of doing so, are the current standards too high?
- All non-interstates are lumped together, in terms of condition, as reflected in the green line. Given their different levels of use, is it a wise use of resources for the state to try to maintain all such classes of road at an equally high level?

Figure 2.3 - Highway Pavement Conditions

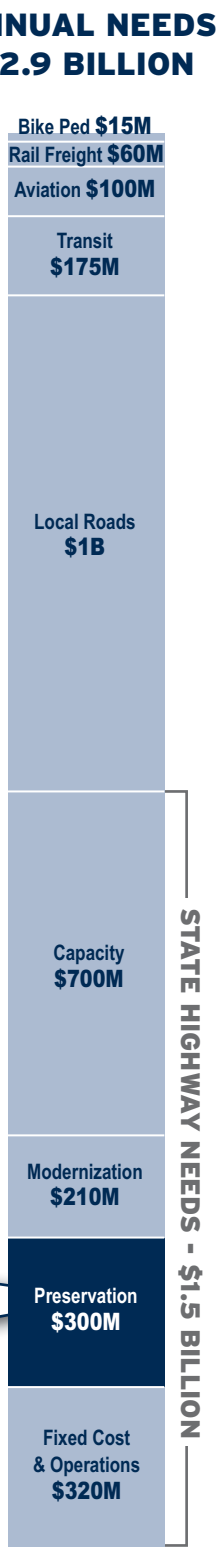


Improvements to US-24 east of Grantville are part of on-going maintenance activities to keep the pavement in good condition.

State Highway and Bridge Preservation Needs

Definition: Maintenance activities such as roadway reconstruction, pavement overlays, or bridge repairs intended to keep the facility in good condition. Preservation does not include adding lanes or shoulders, or making other improvements.

Projected Annual Need: $300 million in constant 2006 dollars. It is estimated that maintaining the more than 10,000 miles of state highways at their current level would require $200 million dollars annually. Preserving the nearly 5,000 bridges in the state system would cost an additional $100 million.



Responsible Stewards of the Taxpayers' Money

KDOT seeks ways to stretch taxpayers' dollars as it maintains the state's transportation system and has worked hard to ensure that road quality meets Kansans' expectations despite reduced purchasing power. Some of the innovations that have helped KDOT maintain highway performance despite financial challenges includes.

Use of Thinner Pavement Overlays

KDOT used to fix shoulder and travel lane pavement at the same time – to avoid a hazardous shoulder drop off - even if the shoulder was in good shape. Recently, however, the Department has adopted special pavement repair techniques, such as ultra-thin, but hardwearing Novachip surface treatments. They can be applied to the travel lane only, which saves on materials costs, while extending its life and improving its condition without creating a drop-off between the shoulder and the roadway. As a result, despite a 50-70 percent increase in asphalt prices over the past three years, KDOT has still been able to undertake surface preservation actions on nearly 1,200 miles of roadway per year.

Contractors work on K-18 near Ogden.

More Contractor Accountability

KDOT is improving the technical testing procedures it uses to evaluate the smoothness of pavement built by its contractors. This helps the state get what it pays for on road projects – smooth and long-lasting roads. It also has benefits for users, as studies have shown that increases in pavement smoothness result in reduced vehicle maintenance costs.

Reliance on Harder Wearing Materials

KDOT is taking advantage of new advanced roadway materials such as SuperPave asphalts and special aggregates for concrete pavements that are proven to have a longer lifetime and better performance than traditional materials.

BRIDGES

Kansas ranks fourth nationally in the number of bridges and 15th nationally in bridge square footage. The proportion of our bridges in good condition is better than the national average.

There are five classifications of bridges; two of them indicating that a bridge is substandard. A "structurally deficient" bridge is one that is inadequate for today's design loads and as such must be monitored more closely. The design of bridges categorized as "functionally obsolete" isn't up to today's standards. Often, they're simply narrower than would be built today.

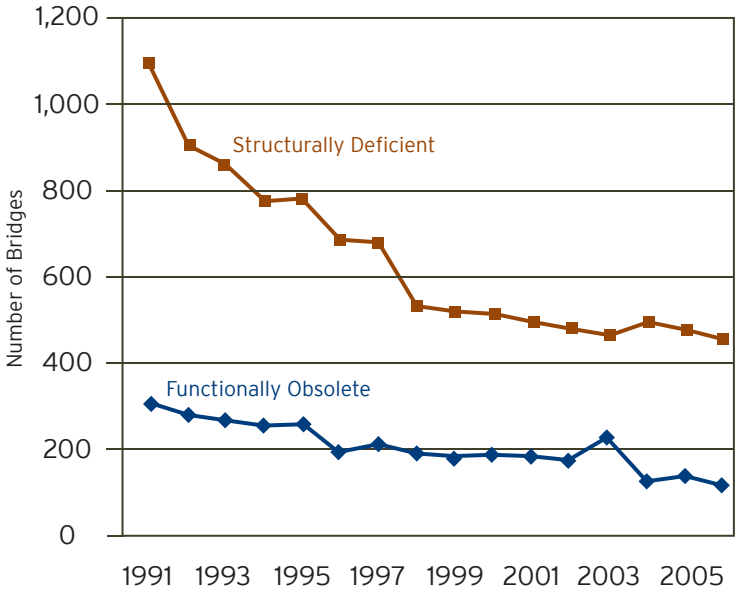
In the United States, there are 600,000 bridges, with 25 percent classified as structurally deficient or functionally obsolete. In Kansas, there are some 26,000 bridges, with 21 percent of them deficient or obsolete.

Bridges on the state highway system, the subject of this chapter, are in better shape than bridges in the local road system, which will be discussed in Chapter 3. Of the nearly 5,000 bridges on the state highway system, only 11 percent are categorized as structurally deficient or functionally obsolete. As shown in Figure 2.4, the number of these bridges on Kansas highways has decreased significantly since the passage of the CHP in 1989.

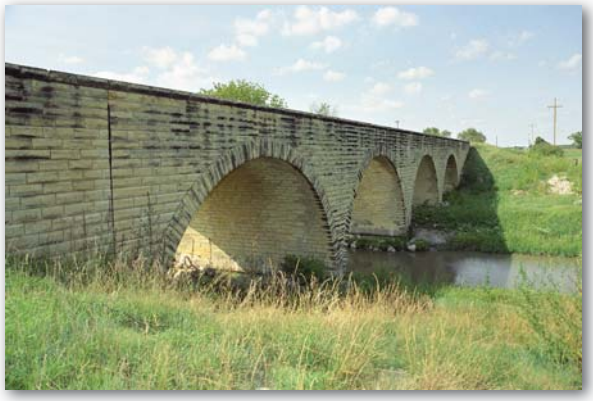
A **structurally deficient** bridge is restricted to light vehicles or closed because of structural deterioration. Although not necessarily unsafe, these bridges must have limits for speed and weight.

A **functionally obsolete** bridge has older design features and, although it is not unsafe for all vehicles, it cannot safely accommodate current traffic volumes or vehicles of certain sizes and weights.

Figure 2.4 - Reduction in Deficient and Obsolete Highway Bridges



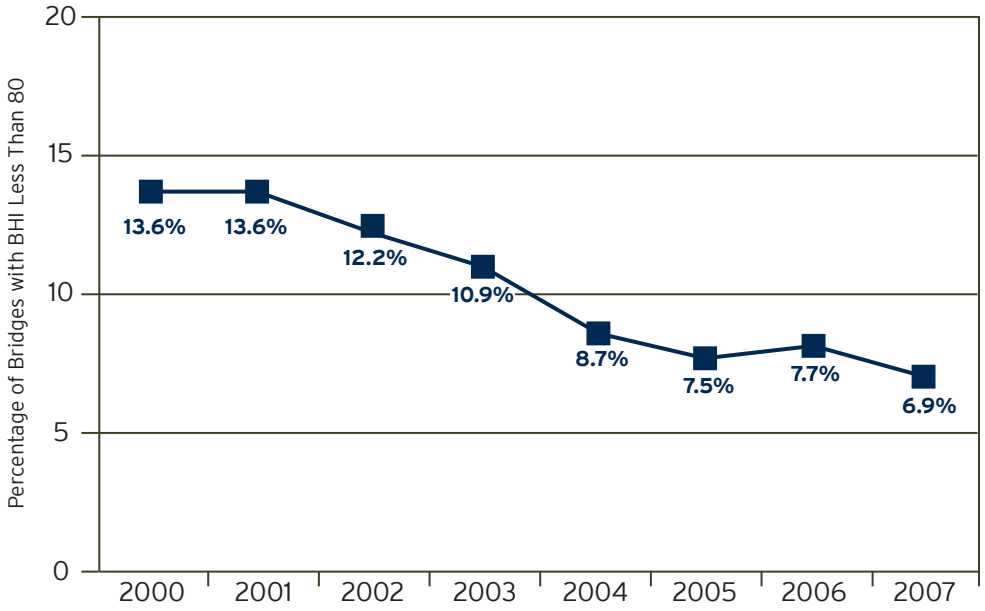
Kansas also uses a Bridge Health Index (BHI) to measure the overall condition of its bridges. The BHI of a bridge is between 0 (worst) and 100 (best). Bridges must score above 80 to be acceptable. KDOT's performance target is to have no more than five percent of bridges on the state highway system fall below a BHI of 80. As shown in Figure 2.5, progress toward this goal has been made since the CTP's beginning in 1999.



The Fort Fletcher Bridge near Hays is just one of the nearly 5,000 bridges on the state highway system KDOT maintains.

While the condition of Kansas bridges has improved considerably, bridge infrastructure is expensive to maintain. Keeping the state's bridges in good repair will require an estimated annual investment of approximately $100 million (in constant 2006 dollars).

Figure 2.5 - Highway Bridge Health Index



HIGHWAY PRESERVATION RECOMMENDATIONS

Make maintenance of existing state highways and bridges a top priority

Because it is less expensive to preserve than rebuild, stakeholders repeatedly stressed that preserving the existing system should take precedence over modernizing or adding capacity. During investment priority discussions, participants generally agreed that preservation should be funded at or near the projected annual need of $300 million.

Re-examine pavement smoothness performance targets

The cost of maintaining pavement smoothness is considerable, particularly in light of funding constraints and competing needs. KDOT must weigh the tradeoffs between preservation and other needs and, in collaboration with its partners and the public, determine an acceptable measure and level of roadway performance. Its assessment should include a review of current performance targets and a discussion of the benefits, drawbacks and other implications of establishing different performance targets for different classes of non-interstate highways.

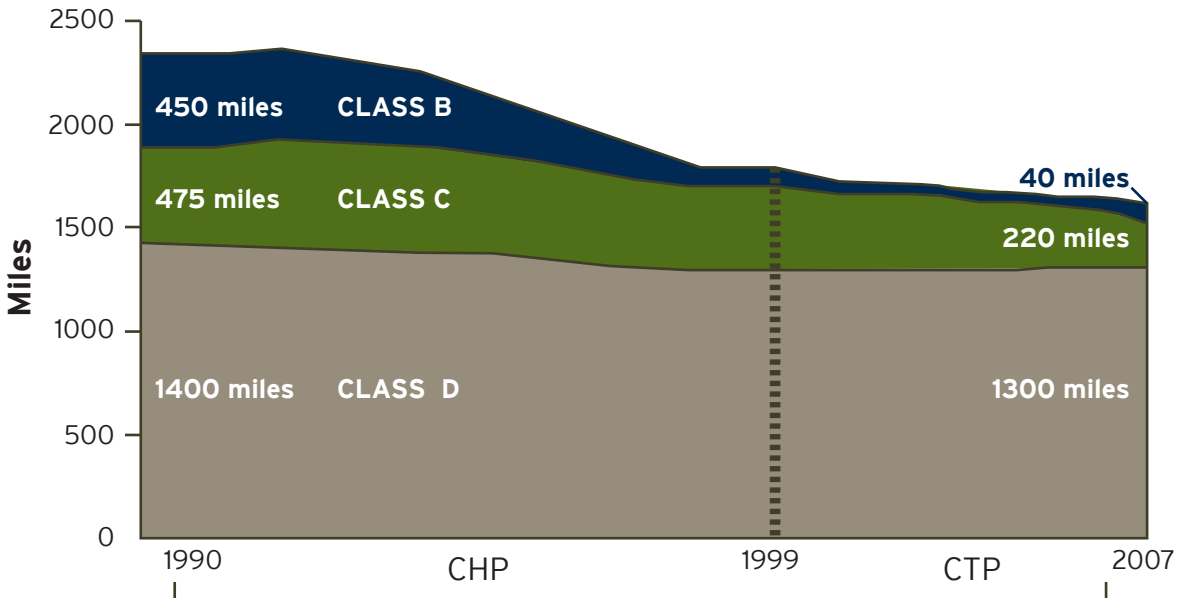
2.3 Highway Modernization

The term "modernization" refers to such improvements as the addition of shoulders, the improvement of sight distances (by flattening hills or straightening curves, for example) and the widening of bridges and lanes. In the past 20 years, Kansas has modernized nearly 800 miles of state highways, resulting in roads that provide safer and more efficient travel for highway users.

As shown in Figure 2.6, more than 1,550 miles of state highway still remain to be modernized. It should be noted that nearly 85 percent of those miles are Class D routes, which average 1,800 vehicles a day. The remaining 15 percent are B and C routes, which average 5,100 and 3,800 vehicles a day, respectively.

Modernization projects have typically involved undertaking as many improvements as possible on a road section at one time. Projects that package improvements to all shoulders, hills, curves, bridges and ditches may be as expensive as $2.5 million per mile. Many stakeholders believe that installing shoulders on routes is important to improving system safety, but that fully upgrading some of the lower-volume routes may not be a high priority.

Figure 2.6 - Kansas Highways in Need of Modernization



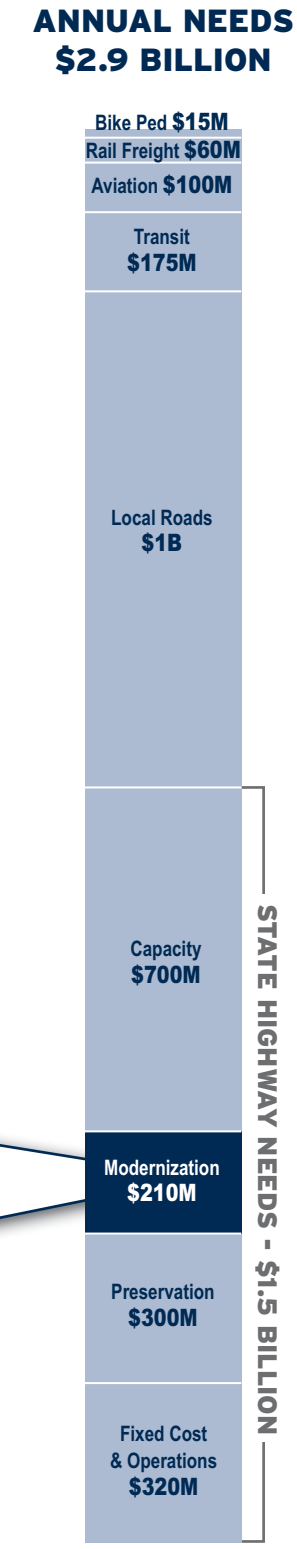
The Omission of Class E Routes
Five hundred miles of Class E routes have shoulders classified as inadequate. With so many competing needs on more heavily traveled routes, these routes haven't been included in modernization estimates or in Figure 2.6.

STATE HIGHWAY MODERNIZATION RECOMMENDATIONS

Employ "practical improvement" strategies to maximize the return on funds dedicated to modernization projects

Transportation stakeholders recognize that not all aspects of modernization have the same cost-benefit ratio. For example, KDOT often heard during meetings around Kansas that even though a highway may benefit from an entire range of modernization actions, the best return on investment may occur with a low-cost, minimal shoulder installation, rather than one that is top of the line. Achieving both safety and bottom-line savings is the essence of a practical approach to modernization.

KDOT recognizes that practical improvement strategies should be deployed sensibly. So it has begun to develop a process to identify candidate projects with features that make feasible a practical improvement approach. Not every modernization project will be a candidate for this approach. But for those that do qualify, it will help the state improve more miles by stretching the available dollars.



State Highway Modernization Needs

Definition: Upgrades to existing roadways, for example, widening roadways, adding shoulders and enhancing sight distances.

Projected Annual Need: $210 million in constant 2006 dollars. It's estimated that making such an investment for 20 years could fully modernize all B, C and D routes.

2.4 Highway Capacity

Large portions of the Kansas road system are relatively free of congestion. Some stretches of road in urban areas, particularly greater Kansas City and Wichita, are not. It may be less obvious, but nonetheless true, that rural roads are carrying an increasing amount of traffic – enough that residents regard them as congested. Being stuck behind a truck – or a string of trucks – can be considered a definition of "congestion" in rural areas.

A congestion problem is rarely confined to one locale, even if it arises there. Congestion at one point has effects upstream and downstream and on other parts of the road system. An improvement to a state highway might help relieve congestion on a local road, or vice versa. This means that in approaching problems of congestion, state and local transportation officials must work cooperatively and develop solutions within the context of the whole system.

URBAN CONGESTION

With increasing population and freight movement, urban areas have seen heavier traffic volumes and worsening congestion. This has had consequences for safety, economic productivity and quality of life. KDOT estimates there are 105 miles of congested highways in the state's urban areas. Many of these miles are City Connecting Links, where cities share responsibility with the state for preservation and improvements. With no investment in capacity, that figure could more than double, reaching 265 miles by 2030 – with all of those miles far more congested than today.

Take K-10 as an example. The 25-mile four-lane expressway connecting Douglas and Johnson counties carries a high volume of commuters. KDOT, along with planning partners in the Kansas City area and Lawrence, conducted a study in 2005. The study showed about 62,000 cars a day used K-10 between highways K-7 and I-435 in Lenexa. By 2030, the study projected that the demand on the road would be 148,000 cars

As Johnson and Douglas counties continue to grow, traffic congestion along K-10 will increase.

a day. K-10's current capacity is about 80,000 vehicles a day. The projected 2030 traffic volume would require a doubling of the roadway's capacity, from four lanes to eight. It would cost an estimated $240 million just to improve this four-mile segment. In addition, the study recommended improvements to the remaining 21 miles of the corridor totaling another $310 million.

Although few examples statewide can match the growth on K-10, the urbanization of Kansas is creating other corridors that have similar issues. These corridors have needs to be addressed so commuters near our largest cities can make their way to and from work and for bottlenecks to be eliminated that block freight from timely arrival. Both are crucial to the state's economic viability.

RURAL CONGESTION

The problem of rural congestion, particularly on highways that lead into urban areas, is also on the rise. KDOT has identified 535 miles of congested Kansas rural highways. Without any additional capacity investments, as many as 1,725 miles could be congested by 2030.

An example illustrates this point. The current traffic volume on US-50 between Garden City and Dodge City is about 5,400 vehicles a day, 1,400 of which are trucks. A 2005 KDOT study estimates that by 2030 as many as 10,000 vehicles, of which 2,800 would be trucks, will travel that two-lane highway each day. The traffic volume will exceed the road's current capacity of 8,000 vehicles per day.

Rural routes like K-4 are projected to see traffic volumes continue to increase into the future.

THE STATEWIDE PICTURE

As indicated in Table 2.3, it has been estimated that nearly 2,000 miles statewide could be at or near congested levels by 2030. Figure 2.7 maps these miles. These projects were developed comparing projected future traffic volumes with current roadway conditions and are intended to provide a statewide perspective on future congestion needs. Some of the corridors depicted are already congested and likely will be more so in the future. Due to the inherently difficult task of making future predictions, by 2030 it is likely that some routes shown as congested won't be, while others not shown will be congested.

The point is clear: when taken as a whole, the numbers of miles that will be approaching or exceeding their capacity in 2030 is significant. To address current and projected congestion needs conventionally – through the addition of lanes, passing lanes and interchanges – Kansas would need to spend $700 million a year (in constant 2006 dollars) over the next 20 years.

Figure 2.7 - Projected Highway Miles At or Nearing Congestion in 2030

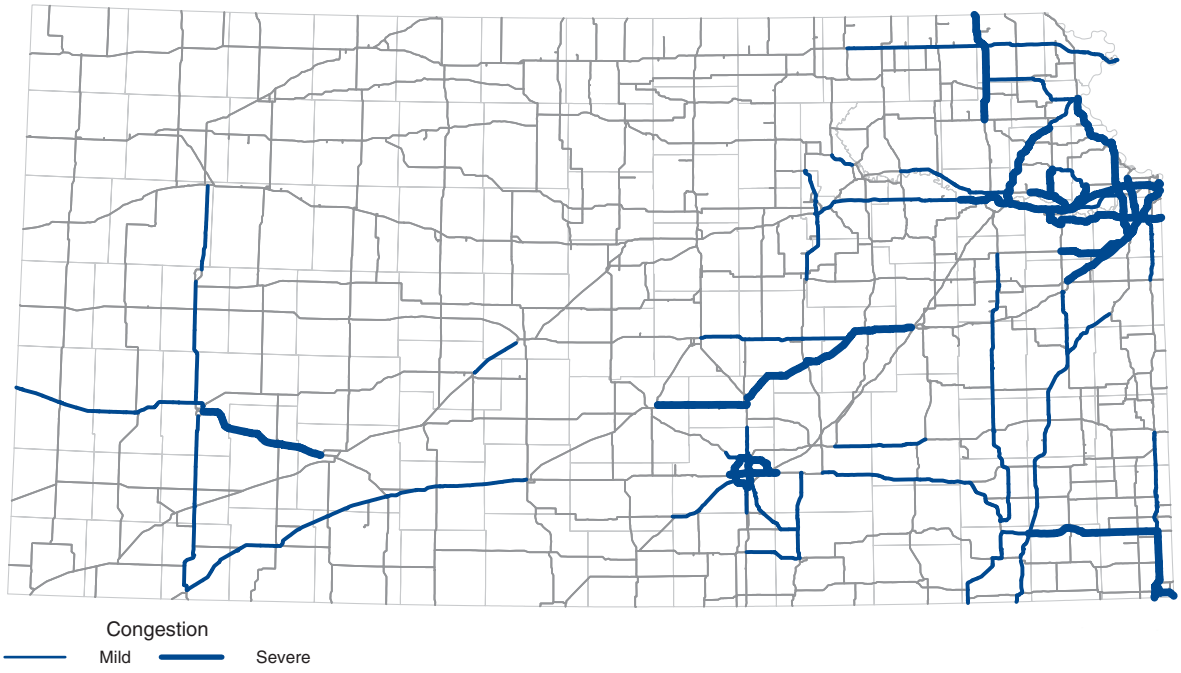
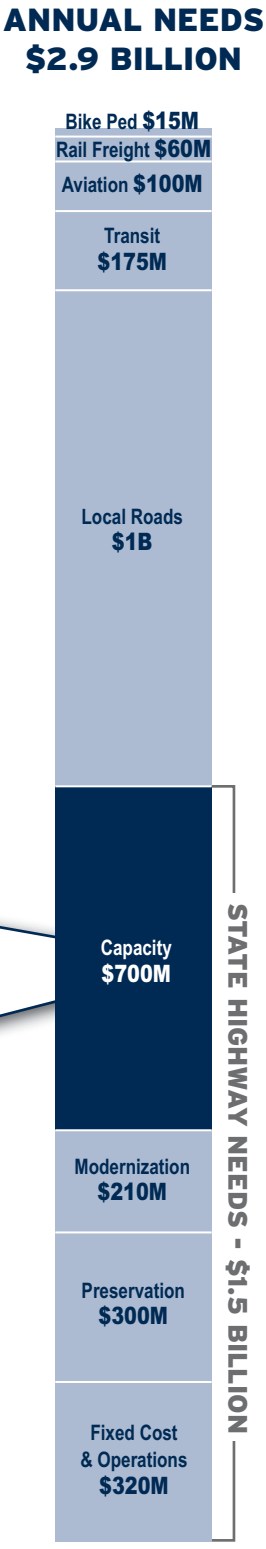


Table 2.3 - Highway Miles At or Nearing Congestion

	2006	2030 (assumes no investment in expansion)
Rural	525	1,725
Urban	105	265
TOTAL	**630**	**1,990**



State Highway Capacity Needs

Definition: Improvements to address congestion on the state's highways, such as additional lanes, passing lanes, interchanges, and intersection improvements.

Projected Annual Need: $700 million in constant 2006 dollars. This investment would relieve projected congestion on urban and rural highways statewide.

INNOVATIVE SOLUTIONS TO CONGESTION

Kansas has been addressing the problem of congestion. It has invested about $250 million a year since 2000 in additional capacity. Yet, the number of congested miles statewide has grown, on average, 4 percent a year.

The high price tag has compelled the state to consider innovative ways to address congestion. Savings can be achieved through road design solutions, use of technology and other tools.

For example, rather than upgrade a two-lane rural corridor to four lanes, it might be better to expand capacity by adding passing lanes or adding turn lanes at points where other roads intersect with the corridor. These measures can result in safer and more fluid traffic movement at a cost lower than doubling the width of the road.

KDOT has begun to invest in another alternative: intelligent transportation systems. ITS can add capacity to a road at a fraction of the cost of adding more lanes. KDOT is promoting or implementing traffic signal coordination to create better traffic flow, and installing message signs on interstates that provide information to drivers about accidents, delays and closures. The KC Scout system in Kansas City is an example, with a similar project being designed for Wichita. Already underway is the first phase of a statewide traveler information project, which will install cameras and message signs on I-70. KDOT is considering the use of "ramp metering," a term that refers to stop lights used on highway on-ramps to smooth the entry of traffic onto highways.

SCOUT Traffic Management Command Center in Kansas City is one example of using technology to increase roadway capacity and safety.

In partnership with local governments, KDOT should also promote constructive policy approaches related to land use and access management. Roadways not only need to keep traffic flowing, they must also provide access to businesses, neighborhoods, schools and offices. Maintaining traffic flow while serving these destinations is a delicate balance. Only by working cooperatively can the system be planned and built to meet these different needs.

Other strategies to reduce congestion in urban areas include public transportation, carpooling and staggered business hours. There are even legal remedies, such as so-called "move it/clear it" laws that permit vehicles in traffic accidents to be removed from roadways more rapidly, relieving accident-induced congestion.

HIGHWAY CAPACITY RECOMMENDATIONS

Expand the system strategically, keeping budget limits in mind

The highway system will have to be expanded, but the estimated annual investment in capacity that's required is expensive - $700 million. One solution involves exploring alternative design approaches, such as the use of passing lanes, turning lanes and three-lane roads, which provide a continuous passing lane that alternates between the two directions.

The second solution involves partnership and thinking holistically about our entire transportation system – rather than thinking of such elements as streets and highways in isolation. KDOT must work with cities, counties and metropolitan planning organizations (MPOs), so that limited resources have the widest possible regional and statewide benefit. This could mean executing a project on a local street rather than a state highway if that choice represents a more economical use of KDOT resources, for example.

Use alternatives to system expansion, including increased use of ITS

More pavement is not the only solution. Technological advances can introduce efficiencies at a fraction of the cost. They merit a reasonable level of investment. Political, social and legal approaches to the problem must also be explored further.

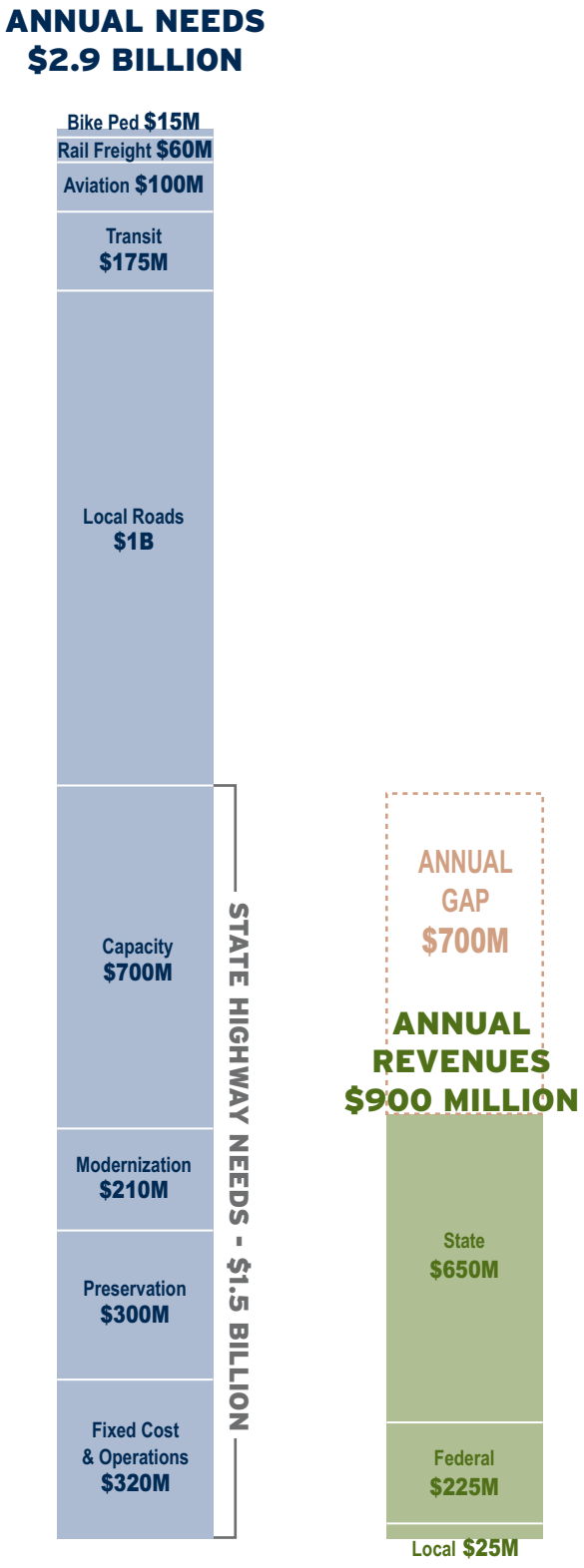
2.5 The State Highway Funding Gap

The cumulative needs for the Kansas state highway system over the next 20 years are estimated at $1.5 billion annually. This figure includes costs for operations (routine maintenance, KDOT administration, debt service and transfers), as well as investments in preservation, modernization and capacity improvements.

In order to estimate annual revenues, current annual funding from various sources was projected forward at conservative rates. Those annual projections were adjusted for inflation (using 2006 dollars as a benchmark) and summed. The sum, divided by 20, yielded average annual revenues of $900 million for state highways.

Comparing needs with revenues leads to an estimated annual funding gap for state highways of $700 million. Because closing this gap would require more than a 75 percent increase in state highway spending, KDOT and its partners will need to develop strategic solutions and may need to make difficult tradeoffs.

During discussion of recommendations by the topical working groups and in statewide meetings, stakeholders participated in a tradeoff discussion exercise. Participants allocated projected transportation revenues in two different scenarios. The first scenario assumed that no new transportation revenues were introduced. The second



Average annual figures in 2006 dollars

included a 30 percent increase in transportation funding. The purpose was to understand stakeholders' priorities and to have discussions about reasonable tradeoffs.

Participants learned that some costs are unavoidable. Annual fixed costs for debt retirement and transfers to other agencies total $135 million. There are also significant operating and routine maintenance costs that KDOT is committed to holding down: average estimates total $185 million. Combined, fixed costs and operations total $320 million.

Throughout the LRTP process, stakeholders stressed that meeting preservation needs was a top priority. The exercise results reinforced this, as most participants chose to fund preservation fully, at a cost of $300 million.

Kansans are also interested in state highway modernization and capacity improvements. Participants in the investment scenario exercise often expressed frustration at not having enough money to fully fund needs in these areas. Without additional revenues and after accounting for operations and preservation needs, only $280 million remains to cover $900 million in modernization and capacity needs. Generally, the participants split the remaining resources between these two needs, with capacity receiving more than modernization.

The tradeoff discussion exercise also included a local road and multi-modal component. More details about that part of the discussion appear on pages 54-55.

Participants discuss tradeoffs in Manhattan during one of many LRTP small-group meetings.